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ABSTRACT

The basic theory underlying this research is that the behavior of children in school, especially their achievement in academic subjects, is a function in part of the subculture of the school. It is hypothesized that each school has a set of norms, evaluations, and expectations characterizing the achievement expected of students in general and of various student subgroups in particular. Although different norms, expectations, and evaluations applied to various groups and individuals account for some variation within the school, it is hypothesized that there are also differences in school social systems that explain differences in achievement among schools. The first and foremost general conclusion derived from this research is that some aspects of school social environment clearly make a difference in the academic achievement between schools. The socioeconomic and racial composition of the schools explain a significant portion of the variance in mean achievement between schools, but the social-psychological and normative variables that were identified clearly contribute an additional portion of the explanation of the variance in mean school achievement. It was also determined that racial and socioeconomic composition alone are not an adequate description of the elementary school environment. (Author/IRT)

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# ELEMENTARY SCHOOL SOCIAL CLIMATE AND SCHOOL ACHIEVEMENT*

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There is much evidence that the level of academic achievement varies greatly from one school to another and that this variance is associated with the socio-economic and racial composition of schools (Coleman et al., 1966). All the analyses of the Equality of Educational Opportunity data (Coleman et al., 1966; Mayeske, 1969; Mosteller and Moynihan, 1972) found that the traditional input variables such as teacher qualifications, school facilities and expenditures added little to the explanation of differences in school level achievement once school socio-economic composition was taken into account. This fact along with further analysis of the effect of education on later occupational and income status caused Jencks (1972) to conclude that school environments could make little difference in achievement or social status. The Jencks book and the failure to identify other school characteristics that explain achievement have had widespread effects. Some social scientists have concluded that this is a fruitless area of research and that school social systems cannot produce significant differences in the academic achievement (Hauser, Sewell and Alwin, 1976). Our belief to the contrary prompted us to search for other school characteristics important in explaining differences in achievement between schools.

The discussion of contextual effects versus the effects of individual background variables has greatly influenced research on the effect of school social systems on academic achievement.[1] The problem is distinguishing between the contribution of the school and the contribution of individual student characteristics. The failure of attempts to separate these effects has caused some

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1. An extensive literature on contextual effects has appeared in recent years (Hauser, 1971 and Farkas, 1974 with Hauser's reply, 1974). These references analyze the issue and give other essential references.

to minimize the effect of the school social system and the usefulness of investigations of its impact on achievement. For example, Hauser states,

> "Because of the limited variance in individual performance which occurs between schools, studies of between school correlations can tell us little about educational differentials. When such studies identify school characteristics with student characteristics, they are simply wrong, and they produce no useful findings." (Hauser, 1971, page 44)

Such statements have reinforced Jencks' conclusion that nothing about schools has much effect on school achievement. Shortly after the above statement, Hauser acknowledges that the problem may result from the use of socio-economic composition or other composition variables as a proxy for the total school environment.

> "In so far as the normative or educational processes supposedly indexed by the school's socio-economic level actually do vary within schools, contextual analyses understate their importance. Finally in as far as socio-economic context is used as an index of the residual effects of the school attended, without regard to the mechanisms by which that influence takes place, the use of socio-economic classifications of schools also understates those effects just as it understates gross school effects." (Hauser, 1971, page 45)

The overall impact of Hauser's monograph and subsequent discussions of the issue has been to minimize the belief that school social systems effect achievement. However, Hauser recognizes the possibility that characteristics of the school other than socio-economic composition may significantly affect the achievement of students. His comments suggest that normative characteristics of the school sub-culture and social-psychological processes may indeed have significant impact on school academic outcomes. Such social-psychological variables which we have identified as school climate are the focus of this research. We ask what, if any, difference in school level achievement do school cultural or normative social-psychological variables account for? Do such variables contribute uniquely beyond socio-economic and/or racial composition in explaining achieve-

ment differences among schools? And, do such climate variables explain any of the variance in achievement among schools commonly attributed to socio-economic or racial composition?

## Related Research

We cannot review all the research relevant to this study, but we shall mention those most directly related to its development.

The Equality of Educational Opportunity study has contributed to this line of research on two scores (Coleman et al., 1966). First, the study indicated that the traditional inputs such as reported teacher qualifications, facilities and expenditures did not explain much of the variance between schools or individuals. At the same time the Coleman analysis and subsequent analyses of the Coleman data (Smith, 1972) suggest that perceptions of the school may contribute significantly to the variation in achievement. The students' sense of control and the students' self-concept as well as the teachers' perception of the nature of the school seem to contribute significantly to the variations in student achievement. Although the original analysis of the Equality of Educational Opportunity data is concerned with individual student variation in achievement, analyses by Mayeske and others (1969) substantiate that similar variables may explain some of the variance between schools.

The original Equality of Educational Opportunity report and the re-analyses of that data offer purely correlational evidence relating school characteristics to student achievement. Evidence of more quasi-experimental nature is provided by studies of the patterns of achievement in schools undergoing desegregation since these studies involve changes in school composition.

Nancy St. John (1975) has provided a comprehensive review and analysis of the findings of a wide range of desegregation studies. After careful evaluation of the effect on academic achievement, she concludes, "In sum, adequate data have not yet been gathered to determine a causal relation between school racial composition and academic achievement" (St. John, 1975, page 36). Various studies produce varied and sometimes opposite findings. The effect of desegregation on the achievement of black students has, in some cases, been found to be very beneficial and, in other cases, non-existent. However, there is little evidence that the addition of black students to predominantly white schools significantly affects the achievement of the white students. Although school racial and socio-economic composition are confounded with other variables, the inconsistent results of these studies suggest the possibility that other variables, associated with student body composition, are important contributors to school academic outcomes.

The study of academic climate in a small number of high schools (McDill, Rigsby and Meyers, 1967, and McDill and Rigsby, 1973) is quite directly related to this research. It suggested that much of the variance in academic achievement explained by socio-economic composition of schools was more appropriately explained by the academic norms and expectations which characterized the student body. The same general hypothesis was applied to the elementary school climate in this research. The research on elementary school climate is directly related to the McDill et al. study of high school climates but is based on random samples of Michigan elementary schools and used measures of climate appropriate for elementary schools.

Several other studies of the effect of high school on later education attainment and social status have been undertaken. The most intensively analyzed

is the longitudinal study of 1957 high school graduates in Wisconsin. The most recent analysis of these data indicate that little of the variance in post high school educational attainment can be attributed to the high school alone (Hauser, Sewell and Alwin, 1976). This, like most studies of high school effects, did not examine the extent to which school climate variables explain differences in academic achievement between schools.

The research reported here is a direct outgrowth of a preliminary study which focused on the identification of normative social-psychological variables that might distinguish between elementary schools with similar socio-economic and racial composition but significantly different levels of academic achievement (Brookover et al., 1973 and Brookover and Schneider, 1975). Elementary schools with atypical achievement were compared to typical schools with similar socio-economic and racial composition. These atypical schools, low SES with high achievement or high SES with low achievement, were matched with schools with similar racial and socio-economic composition but significantly different levels of achievement. The twenty-four schools provided the basis for identifying normative social-psychological variables that distinguished between high and low achieving schools. The desire to test the validity of the finding of the preliminary study prompted us to study a random sample of Michigan elementary schools.

While the present study differs in many important methodological aspects from previous research in this area, there are several points which need to be emphasized. First, rather than relying upon socio-economic status and school racial composition or other school variables as proxies for climate, we have endeavored to identify and measure specific social-psychological indices of school climate. Second, our research focuses upon elementary schools--a level where it might be expected that schools could have the greatest incremental im-

pact on achievement, but one about which we know relatively little. Third, we have taken great care in specifying the school as our basic unit of analysis. Given the potency of school climate variables, this becomes the appropriate unit of analysis. Fourth, we have employed a stratified random sample of elementary schools thereby extending the generalizability of our results. Finally, we have carried out analyses focusing both upon the separate black and white subsamples as well as the overall random sample thereby allowing us to search for potential differences in the subgroups of schools vis a vis the impact of school climate.

## Theoretical Framework

The basic theory underlying this research is that the behavior of children in school, especially their achievement in academic subjects, is a function in part of the subculture of the school. The children take their clues from those important to them and with whom they interact, attending carefully to their expectations and definitions of appropriate behavior for them. In the context of the school social system, students come to perceive the norms, expectations, values and beliefs that others hold for them and act accordingly. We hypothesize that each school has a set of norms, evaluations and expectations characterizing the achievement expected of students in general and various student subgroups in particular. Although different norms, expectations and evaluations applied to various groups and individual students account for some variation within the school, we hypothsize that there are also differences in school social systems which explain differences in achievement among schools.

The senior author's extended research in the area of self-concept of academic ability and school achievment during the decade of the sixties contributed

to the development of the school climate concept (Brookover and others, 1962, 1965, and 1967). These studies led to questions concerning the origins of individual student self-concept. We hypothesized that individual self-assessment of academic ability is derived from interaction with significant others in the educational context. The evaluations and beliefs expressed to the student through a variety of communications affect the student's self-assessment of what he is able to learn. Examination of the process by which self-conceptualizing culminates in decisions concerning the school learning behavior stimulated interest in the group norms, expectations and evaluations characteristic of the school social system (Brookover and Erickson, 1975). These norms, expectations and evaluations we identify as school climate.

The concept of school climate has been used in many different ways. The composition of the study body as measured by socio-economic status, race, or other composition variables has frequently been used as a measure for school climate. Others have used measures of student personality or characteristics of school organization as proxies for school climate (Anderson, 1970 and O'Reilly, 1975). Our conception of school academic climate may be expressed as follows:

> "In the social-psychological frame of reference in which we examine learning, the school social climate encompasses a composite of variables as defined and perceived by the members of this group. These factors may be broadly conceived as the norms of the social system and expectations held for various members as perceived by the members of the group and communicated to members of the group." (Brookover and Erickson, 1975)

These two general dimensions--norms and expectations--are theoretically highly related. Norms tend to be expressed in the common beliefs concerning the appropriate forms of behavior for members of that social system. Norms and expectations involve both the definitions of appropriate behavior expressed by others in the system, and the perceptions of these expectations as understood

by members of the group. These definitions of appropriate behavior which characterize a social system, in this instance the school, are no doubt related to the composition of the membership. However, we hypothesize that a school's academic norms, expectations and beliefs which we call climate are not synonomous with the social composition of its student body and therefore climate is not adequately measured by composition variables. Further, we hypothesize that the differences in school climate explain much of the differences in achievement between schools that is normally attributed to composition. This complex interrelationship between composition, climate and achievement among elementary schools is the focus of this research.

## School Climate Instruments

The instruments which we have developed to measure the school academic climate are composed of items oriented toward this frame of reference. We assume that the students, teachers and principal are the most relevant participants in the school social system. That does not exclude the possible effect that others including parents or other persons who interact with the members of the school society may have. But we assume that students, teachers and principals are better informants concerning the norms and expectations that are relevant to student academic behavior in the school. The various items used in this study are, therefore, concerned with these norms, expectations and the feelings associated with the norms of the school social system. In any case, a part of our effort was to identify and measure this complex of feelings, attitudes, beliefs, values, expectations and norms of the school subculture more directly than have other studies using social composition, personality traits or organization characteristics as proxies for school climate.

Since we are concerned with sorting out the effects of school composition from the effect of the normative social-psychological climate and processes, it was essential that we develop instruments specifically designed to measure such variables. The McDill, Rigsby and Meyers (1967) study of high schools provided some precedent, but the type of items used in the high school climate were hardly appropriate to elementary schools.

The instruments developed as the criteria for school climate are essentially new and are the product of a series of developmental procedures. In this process the students, the teachers and the principal are perceived as reporters or informants concerning the nature of the academic norms, expectations, evaluations and the interaction that occurs in the arenas of behavior relevant to school academic achievement.

The instruments used to identify school climate variables in this research result from three stages of development, (1) the pretesting of a large number of items, (2) analysis of data in a preliminary study and (3) analysis of data from the current study.

Developmental Stage I: A series of questionnaires were pretested in elementary schools of a middlesized midwestern city. The items included in the questionnaire, originally administered to third, fourth, fifth and sixth grade students in several schools largely composed of lower socio-economic black and white students, were constructed with general foci upon concepts of norms, perceived evaluations, perceived expectations and sense of control of students. After having been administered to hundreds of students, these items were modified in the light of the problems that were found in communication, meaning and readability. Modified instruments were readministered to students in other similar schools. Various clusters of items in this questionnaire were subjected to scalogram analysis to identify scales measuring students' perceived

expectations and evaluations, school norms and perception of teachers' academic norms. Items in the first pretested instruments that did not fit in the scales or otherwise did not contribute significantly for a variety of reasons were eliminated.

Developmental Stage II: The student questionnaires developed in the pretest process were then used in a preliminary study designed to identify variables that might distinguish between high and low achieving schools with similar composition (Brookover, Gigliotti, Henderson and Schneider, 1973).

The climate variables identified in this preliminary study of twenty-four schools did distinguish between high and low achieving schools with similar composition. In this sense, the predictive validity of climate variables was demonstrated. This gave the foundation for the belief that further study of the contribution of school normative climate to achievement was justified. The climate variables identified in the preliminary research were the primary source of items for the instruments used in the research involving random samples of Michigan elementary schools reported here. All the student and teacher items developed in the previous study to measure school climate were included in the student and teacher questionnaires used to obtain data for the current study. A few items were added to the two questionnaires to identify areas of climate that were not adequately covered in the previous research.

Developmental Stage III: The data obtained from the random sample of Michigan elementary schools were factor analyzed by both principal components and varimax rotation techniques. All items designed to identify the school climate variables were included in the factor analysis for teacher, principal and student variables. Since the focus of this research was on the school climate, the school was the unit of analysis in the factor analysis for both student and teacher climate data. Thus, the mean student response and the mean teacher re-

sponse for each school were the data used in each factor analysis. Since there was only one principal for each school, the individual principal's response was the input into the factor analysis.

The factor analyses were major inputs in determining the content of each school climate variable, but the factors thus identified were not the sole consideration in identifying the climate variables. Examination of the content validity of the item as a measure of the variable identified was a consideration in including or rejecting items for the variables used in the analysis. A few items that loaded heavily on two factors were placed in the one on which it had the second highest loading because in the judgment of the research team it had greater content validity in the second factor. No item was included in a variable that did not have a loading of at least .30 on that factor. A small number of items that had reasonably high loadings on a factor were not included in any climate variable in the final analysis because they did not have appropriate content validity in the independent judgment of the members of the staff. For these reasons, the factor loadings were not used to weight the items in creating climate variables. Each item in the three questionnaires had a multiple choice response. The total score of these responses was used as the score for each variable.

The items for each of the resulting student, teacher and principal climate variables are shown in Appendix A. Five multiple choice responses were provided for each item. The student climate variables were identified as follows: Student Climate I--Student Sense of Academic Futility; Student Climate II--Student Future Evaluations and Expectations; Student Climate III-Student Perceived Present Evaluations and Expectations; Student Climate IV--Student Perception of Teacher Push and Teacher Norms; Student Climate V--Student Academic Norms. The teacher

climate variables were as follows: Teacher Climate I--Ability, Evaluations, Expectations and Qualtiy of Education for College; Teacher Climate II--Teacher Present Evaluations and Expectations for High School Completion; Teacher Climate III--Teacher-Student Commitment to Improve; Teacher Climate IV--Teacher Perception of Principal's Expectations; Teacher Climate V--Teacher Academic Futility. Principal climate variables that emerged from this analysis were as follows: Principal Climate I--Parent Concern and Expectations for Quality Education; Principal Climate II--Principal's Efforts to Improve; Principal Climate III--Principal and Parent Evaluation of Present School Quality; Principal Climate IV--Principal's Present Expectations and Evaluations of Students.

An examination of the items in the several climate measures suggests that the variables measured are at least reasonably close to our theoretical conception of school climate or school subculture. We have tried to develop instruments that measure various dimensions of school climate rather than rely on numerical techniques alone. The relevance and significance of school climate as a factor in school achievement ultimately depends, of course, on the predictive validity of these instruments.

Although individual student or teacher perceptions of the norms and expectations may vary within a school society, it is clear from Table 1 that significant between school variance exists in the climate variables. We believe that the differences in climate between schools are important aspects of the school social environment. Further analysis will demonstrate that such differences are predictive of the differences in mean school achievement.

Although there is some variance in school climate between classrooms within the school, the within school differences are not so great as to deny the existence of a characteristic climate for the school. The knowledge of the

TABLE 1.

Mean and Standard Deviation of Mean School Variables in Three Samples of Michigan Elementary Schools

| Variable | State Sample m | State Sample σ | Black Sample m | Black Sample σ | White Sample m | White Sample σ |
|---|---|---|---|---|---|---|
| 1974 Achievement | 74.88 | 9.53 | 56.48 | 7.77 | 77.36 | 6.11 |
| Mean SES | 3.03 | 1.01 | 1.86 | 1.29 | 3.19 | .93 |
| Percent White | 85.44 | 27.37 | 8.20 | 14.23 | 93.98 | 9.30 |
| S T U D E N T | | | | | | |
| Student Climate I, Sense of Academic Futility | 45.97 | 2.11 | 42.21 | 1.94 | 46.46 | 1.59 |
| Student Climate II, Future Evaluations and Expectations | 42.68 | 3.60 | 42.70 | 3.29 | 42.68 | 3.67 |
| Student Climate III, Perceived Present Evaluations and Expectations | 23.11 | .81 | 24.50 | .66 | 22.95 | .67 |
| Student Climate IV, Perception of Teacher Push and Teacher Norms | 16.63 | .59 | 16.52 | .70 | 16.61 | .58 |
| Student Climate V, Academic Norms | 22.81 | .62 | 22.72 | .83 | 22.80 | .62 |
| T E A C H E R | | | | | | |
| Teacher Climate I, Ability, Evaluations, Expectations and Quality of Education/College | 31.60 | 6.19 | 33.65 | 6.29 | 32.48 | 6.38 |
| Teacher Climate II, Present Evaluations and Expectations for High School Completion | 35.24 | 3.05 | 31.91 | 3.58 | 35.84 | 2.47 |
| Teacher Climate III, Teacher-Student Commitment to Improve | 31.52 | 3.86 | 34.52 | 4.20 | 31.25 | 3.88 |
| Teacher Climate IV, Perception of Principals Expectations | 16.01 | 3.77 | 16.54 | 3.35 | 16.04 | 3.89 |
| Teacher Climate V, Academic Futility | 21.86 | 2.34 | 20.85 | 2.04 | 21.93 | 2.32 |
| P R I N C I P A L | | | | | | |
| Principal Climate I, Parent Concern and Expectations for Quality Education | 22.54 | 2.30 | 21.83 | 2.68 | 22.66 | 2.24 |
| Principal Climate II, Efforts to Improve | 7.75 | 1.56 | 8.63 | 1.40 | 7.69 | 1.54 |
| Principal Climate III, Principal and Parent Evaluation of Present School Quality | 15.35 | 2.40 | 13.53 | 2.11 | 15.59 | 2.39 |
| Principal Climate IV, Present Evaluations and Expectations of Students | 29.22 | 4.53 | 27.52 | 5.05 | 29.68 | 4.45 |

school in which a classroom is located alone accounts for 43 percent of the between classroom variance in student sense of academic futility and somewhat less but significant proportions, 16-35 percent, of the between classroom variance in other student and teacher climate variables. The F ratio in the analysis of variance is significant at the .01 level on all variables except student climate variables IV and V, which were .03 and .13 respectively.

These data indicate that school climates, as measured by the variables we have identified, differ from school to school and the climates of the classrooms within a school are somewhat more like each other than they are like the climates of classrooms in other schools in the state random sample. Thus, the school is also an appropriate and meaningful social unit for the analysis of the effect of social climate on achievement.

## School Composition Variables

Two school composition variables, mean socio-economic status and percent white were used in this study. The mean socio-economic status of the schools in this sample was determined in one of two ways. In all the schools outside the City of Detroit, the students were asked to identify the occupation of the families' main breadwinner. Members of the research staff who administered the questionnaires provided assistance when needed in identifying occupations. The occupation data were scored using the Duncan occupational scale with the resulting scores being averaged across all fourth and fifth grade students within a school to provide the mean school SES. School officials in the City of Detroit asked the research team not to obtain occupational data from the students. A sample of 50 students in each Detroit school was selected at random by the principal or his designated assistant. Occupational data for the parents of the

students in these samples were obtained from the enrollment card files maintained in each school. The data were given to the research team without any identifying information so as to preserve the anonymity of the students.

The racial composition in each school is reported to the State Department of Education on the fourth Friday of each school year. From this report the percent white for each school is determined and included in the school assessment report.

## The Dependent Variable

The dependent variable in this research is the mean achievement of students in the fourth grade in each of the elementary schools as calculated from school level state achievement data obtained from the Michigan Assessment Program of the Michigan State Department of Education (Michigan Department of Education, no date). Objective referenced tests in reading and mathematics are administered to all fourth grade students in Michigan public schools annually. The objectives for both tests are identified by committees of teachers and other educators. Competence in each objective is measured by five items. Mastery of the objective is defined as correct answers on at least four of the five items. The achievement data for each school consists of the percentage of students mastering each of the 19 reading and 30 arithmetic objectives as well as data on each of the 245 items entering into these 49 objectives. Our dependent variable of primary interest is the school level average of the percentages passing each of the 49 objectives. Preliminary analysis examining intercorrelation among this average, the separate reading percentage average, the separate arithmetic percentage average, an average equally weighing the reading and arithmetic percentage, reading total scores, arithmetic total scores, weighted

and unweighted average of reading and arithmetic, demonstrated minimum correlations above .97.

## The School Samples

The schools included in this study are random samples of the universe of Michigan public elementary schools that contained fourth and fifth grade students at the time the samples were drawn. There are three groups of schools upon which our analyses focused: the state sample, the black sample and the white sample. The 68 schools in the state sample constitute a random sample of Michigan public schools containing fourth and fifth grade students. The 61 schools in the white sample are those schools contained in the state sample whose student population is more than 50 percent white. These schools, therefore, constitute a random sample of majority white Michigan public schools containing fourth and fifth grade students. The black sample is composed of the seven majority black schools contained in the state sample along with 23 additional majority black schools randomly selected from the population of majority black Michigan public schools containing fourth and fifth grade students. Table 2 contains appropriate population data and sample size for each group. Less than one percent of the student questionnaires were unusable and approximately two percent of the teachers failed to return completed questionnaires. As noted in Table 2, a small number of schools shown in the samples refused to cooperate. Analysis carried out using State assessment data revealed no significant difference between cooperative and non-cooperative schools on achievement, racial composition or community type. Based on these facts, we feel a strong case can be made to generalize the results to the relevant population of Michigan public schools containing fourth and fith grade students.

TABLE 2.

Population Data Concerning Three Random Samples of Public Elementary Schools in Michigan with Fourth and Fifth Grade Students

| | State Sample | Black Sample | White Sample |
|---|---|---|---|
| Schools in Universe | 2,226 | 225 | 2,001 |
| Sampled Schools Participating | 68 | 30 | 61 |
| Sampled Schools Not Participating | 10 | 7 | 7 |
| Students Participating | 8,078 | 4,737 | 6,729 |
| Teachers Participating | 3[illegible] | 177 | 276 |
| Principals Participating | 68 | 30 | 61 |

## Data Gathering

The student questionnaires were administered in each school by a trained staff of research personnel. Each fourth and fifth grade level classroom teacher was asked to respond to the teacher questionnaire during the time that the student questionnaires were being administered. To avoid any potential interaction between teacher and pupils, the teachers were asked to leave the room during questionnaire administration. The principal was given a questionnaire when the team arrived at the school and was asked to respond to the questionnaire during the time the field team was there. In a few instances when the principal could not complete the questionnaire it was returned by mail. One hundred percent of the principal questionnaires were returned and nearly all of the fourth and fifth grade teachers in sampled schools responded to teacher questionnaires. A very small number of teachers, never more than one or two in the same school, refused to complete the questionnaire.

## Regression Analysis of the Effect of School Composition and School Climate on Mean School Achievement

Prior to performing multiple regression analyses, we computed correlations among the school means on each of the 14 climate variables, mean SES, percent white and mean school achievement as of Fall 1974. These matrices are found in Appendix B. The correlations between mean achievement and each of the climate variables in the three samples are shown in Table 3. These correlations indicate some variation between groups in the relationship of the several climate variables to achievement. In general, climate as measured by teacher and student variables seems to be slightly more highly correlated with achievement in the black school sample than in the white sample. These differences are not consis-

TABLE 3.

Simple Correlation Between the School Means* of 14 Climate Variables and 1974 Mean School Achievement in Three Random Samples of Michigan Elementary Schools

| Climate Variables | State Sample (68) | Black Sample (30) | White Sample (61) |
|---|---|---|---|
| STUDENT | | | |
| I. Student Sense of Academic Futility | .769 | .694 | .514 |
| II. Future Evaluations and Expectations | .218 | .397 | .380 |
| III. Perceived Present Evaluations and Expectations | -.569 | .022 | - |
| IV. Perception of Teacher Push and Teacher Norms | -.090 | .203 | .013 |
| V. Student Academic Norms | -.080 | .349 | -.083 |
| TEACHER | | | |
| I. Ability, Evaluations, Expectations and Quality of Education for College | .228 | .521 | .279 |
| II. Present Evaluations and Expectations for H.S. Completion | .664 | .267 | .419 |
| III. Teacher-Students' Commitment to Improve | -.105 | .392 | .090 |
| IV. Perception of Principal's Expectations | .198 | .547 | .315 |
| V. Teacher's Academic Futility | .128 | .065 | .089 |
| PRINCIPAL* | | | |
| I. Parent Concern and Expectations for Quality Education | .320 | .186 | .315 |
| II. Efforts to Improve | -.237 | -.229 | -.255 |
| III. Evaluations of Present School Quality | .365 | .248 | .232 |
| IV. Present Evaluations and Expectations of Students | .377 | .407 | .217 |

* Climate variables expressed by principals for each school were based on only one respondent in each school.

tent, however. For example, both students' perception of future evaluations and expectations and the teachers' evaluations and expectations for college are more highly related to achievement in the majority black schools while the present evaluations and expectations as reported by both the students and teachers are more highly related to achievement in majority white schools. The teachers' reports of their own and the students' commitment to improve, the teachers' perception of the principal's expectations and the principal's evaluations and expectations are somewhat more related to achievement in the black school sample than in the white one. The only climate variable that consistently has a low correlation with mean school achievement is the teachers' feelings that there is little demand or chance for high achievement which we identified as Teacher Climate V, teacher academic futility. Some other climate variables have low correlations with achievement in some samples but have a significant correlation with mean achievement in other samples.

Since our primary hypothesis is concerned with the relative contribution of composition variables and climate variables to differences in mean school achievement, a series of multiple regression analyses was carried out on each sample of schools.

Since the composition and climate variables are intercorrelated, we carried out two multiple regression analyses on each sample to assess the unique contributions of both composition variables and climate variables to the prediction of school mean achievement. In the first regression analysis, we entered mean socio-economic composition and the percent white in the school in that order prior to the 14 school climate variables. In the second analysis, the climate variables were entered as a set into the multiple regression analysis then followed by mean socio-economic composition and the percent white. The

results of these two sets of multiple regression analyses are shown in Table 4.

More than one-half of the variance in mean achievement between schools in each sample is explained by the combination of SES, racial composition and the climate variables. About four-fifths of the variance in achievement between schools in the state sample and majority black schools is explained by this combination of variables. The composition variables account for more of the explained variances in achievement, when entered prior to the climate variables, in the state sample than in the black or white school samples. In both the latter samples the variance in the composition measures is less than in the state sample. When percent white is added as the second variable it adds 33 percent to the explained variance in mean achievement in the state sample, but only 6 and 12 percent respectively in the black and white samples.

Variance in mean school achievement explained by climate after composition: In each of the samples the addition of the climate variables to the multiple regression analysis following the inclusion of the two school composition variables yields a significant increase in the $R^2$. In the state sample the increase in the $R^2$ is only four percent, but climate variables add 36 percent in the black sample and 12 percent in the white sample. The climate variables therefore make some contribution toward the prediction of mean school achievement over and above that made by the two school composition variables. In the majority black school sample the climate variables explain a much larger share of the variance in mean achievement over and above that explained by socio-economic and racial composition than in the white or state sample.

Variance explained by climate when entered prior to composition: The second portion of Table 4 presents the results of the multiple regression analy-

TABLE 4.

Summary of Multiple Regression Analysis Showing Comparative Contribution of Composition Variables, Mean Socio-Economic Status and Percent White, and Mean School Climate Variables to Variance in Mean School Achievement in Samples of Michigan Elementary Schools

| Variance in Mean School Achievement Attributed to: | State Sample (68) $R^2$ | $R^2$ added | Black Sample (30) $R^2$ | $R^2$ added | White Sample (61) $R^2$ | $R^2$ added |
|---|---|---|---|---|---|---|
| SES entered first | .45617 | | .36047 | | .30865 | |
| Percent white | .78483 | .32866 | .41623 | .05576 | .43305 | .12440 |
| Climate variables | .82631# | .04148 | .77846 | .36223 | .55265* | .11960 |
| Climate entered first | .72543 | | .72816 | | .44519 | |
| SES | .74612 | .02069 | .77736 | .04920 | .49447 | .04928 |
| Percent white | .82673 | .08061 | .77846 | .00110 | .55267 | .05819 |

* One climate variable, Teacher Climate II, was omitted because the F-level was insufficient for computation.

# One climate variable, Principal Climate I, was omitted because the F-level was insufficient for computation.

sis when the 14 climate variables are entered prior to mean socio-economic status and percent white. In all samples, most of the explained variance in mean achievement between schools is explained by the climate variables. Approximately 10 percent or less of the total variance in mean school achievement is explained by the composition variables, SES and percent white, after controlling for the climate variables. In the statewide random sample of 68 schools in which 82 percent of the variance in mean school achievement was explained, more than 72 percent is explained by the climate variables. Although there are some differences in the relative contribution of the composition variables in explaining variance in mean achievement over and above the contribution of the climate variables in the samples, the fact remains that 80 percent or more of the explained variance in mean achievement is attributable to the climate variables when entered into the regression analysis first.

It is apparent that composition variables used alone as a measure of school environment are inadequate measures of the impact of school climate as identified in this study. Furthermore, much of the variance in mean school achievement attributed to composition variables may actually be the result of differences in climate associated with composition. The very high correlation between percent white and several of the climate variables suggests that the climate typical in elementary schools is highly associated with the racial composition of the student body. When the climate variables were entered in the regression equation first, the addition of racial composition increased the explained variance only a small amount.

Analysis using mean SES as single composition variable: Since Coleman (1966) has indicated that socio-economic composition contributed more than racial composition and racial composition was partially controlled in our major-

ity white and majority black school samples, a similar multiple regression analysis was made with socio-economic status as a single measure of composition. The results of this analysis are shown in Table 5. The total variance in mean school achievement explained by the combination of SES and climate variables is slightly less than that explained with percent white included. The greatest difference is in the state sample of 68 schools where the climate variables had contributed only four percent to the explanation of the mean school achievement variance over and above both composition variables; they explain 29 percent over and above SES. The general pattern of results, however, is similar to those in the previous table. Climate variables explain a very significant additional amount of the variance after the effect of SES has been removed in each of the samples. Approximately one-fifth or more of the total variance is explained by the climate variables over and above that explained by mean SES.

When the reverse process is used in the multiple regression analysis, the mean SES composition adds little to the explained variance after the effect of climate variables has been controlled. In none of the samples does SES add more than five percent to the variance explained after the effect of climate variables is removed. This analysis reaffirms the previous analysis in that the school climate variables which we have identified explain a significant proportion of the difference in achievement between schools beyond that explained by social composition and that much of the variance explained by socio-economic composition is also explained by differences in climate variables which are associated with composition.

Relative contribution of several climate variables to variance in mean achievement: Since it is clear that the combination of school climate variables identified in this study contribute significantly to the explanation of the

TABLE 5.

Summary of Multiple Regression Analysis Comparing the Effect of Mean Socio-Economic Status and Climate Variables on Variance in Mean School Achievement in Random Samples of Michigan Elementary Schools

| Variance in Mean School Achievement Attributed to: | State Sample (68) $R^2$ | State Sample (68) $R^2$ added | Black Sample (30) $R^2$ | Black Sample (30) $R^2$ added | White Sample (61) $R^2$ | White Sample (61) $R^2$ added |
|---|---|---|---|---|---|---|
| SES | .45617 | | .36047 | | .30865 | |
| Climate Variables | .74612* | .28995 | .77733 | .41686 | .49447 | .18582 |
| Climate Variables | .72543 | | .72816 | | .44519 | |
| SES | .74612 | .02061 | .77736 | .04920 | .49447 | .04928 |

* One climate variable, Student Climate IV, was omitted because the F-level was insufficient for computation.

variance in mean school achievement between schools, we examined the individual contribution of each of several climate variables to mean achievement. In Tables 6, 7, and 8, the results of forward step-wise multiple regression analyses of mean school climate variables on mean school achievement in each of the three random samples are presented. Included in each table are those climate variables that increase the $R^2$ by approximately .01 or more. The variables are entered in the order of their partial correlation with mean achievement after partialling out previously entered variables. The number of climate variables entered before the last one that increased the $R^2$ by one percent or more was different in the three samples, six in the state sample, eight in the black sample and seven in the white school sample. In all three samples, the students' sense of academic futility clearly contributes more than any of the other climate variables. This variable is apparently more important in the prediction of achievement in schools containing black students than in majority white schools. It will be noted that the other variables that contribute about one percent or more to the variance in mean achievement in the statewide sample are student and teacher variables concerned with academic norms, the evaluations and expectations which teachers hold for the students, and the students' perception of evaluations and expectations. This combination of six variables explains 70 percent of the variance in mean school achievement between elementary schools in the statewide sample.

The eight variables that increase $R^2$ about one percent or more in the majority black school sample explain 71 percent of the total variance in mean school achievement between schools with the students' mean sense of academic futility being the largest contributor. It will be noted, in referring to Table 3 as well as Tables 7 and 8, that a somewhat different set of variables

TABLE 6.

Multiple Regression of Mean School Climate Variables That Contribute Approximately One Percent or More to Variance in Mean School Achievement in a Representative Random Sample of 68 Michigan Elementary Schools

| Variable | Simple r | Multiple R | $R^2$ | $R^2$ change | Significance |
|---|---|---|---|---|---|
| Student Climate 1, Student Sense of Academic Futility | .76885 | .76885 | .59114 | | .000 |
| Student Climate 3, Perceived Present Evaluations and Expecatations | .56885 | .80074 | .64118 | .05005 | .004 |
| Teacher Climate 2, Present Evaluations and Expectations for High School Completion | .66413 | .82561 | .68164 | .04046 | .006 |
| Teacher Climate 5, Teacher Academic Futility | .12781 | .82916 | .68750 | .00586 | .281 |
| Teacher Climate 3, Teacher-Student Commitment to Improve | .10605 | .83228 | .69355 | .00605 | .273 |
| Teacher Climate 4, Perception of Principal's Expectations | .19833 | .83927 | .70438 | .01083 | .143 |

Total $R^2$ for 13 climate variables is .72539. One climate variable, Student Climate 4, was omitted because the F-level was insufficient for computation.

TABLE 7.

Multiple Regression Analysis of Mean School Climate Variables That Contribute Approximately One Percent or More to the Variance in School Mean Achievement in a Random Sample of 30 Majority Black Elementary Schools in Michigan

| Variable | Simple r | Multiple R | $R^2$ | $R^2$ change | Significance |
|---|---|---|---|---|---|
| Student Climate 1, Student Sense of Academic Futility | .69374 | .69374 | .48127 | | .000 |
| Teacher Climate 3, Teacher-Student Commitment to Improve | .39189 | .77891 | .60670 | .12543 | .007 |
| Teacher Climate 4, Perception of Principal's Expectations | .54696 | .79298 | .62881 | .02211 | .224 |
| Teacher Climate 1, Ability, Evaluations Expectations and Quality of Education for College | .52061 | .80613 | .64985 | .02104 | .232 |
| Principal Climate 3, Principal and Parent Evaluation of Present School Quality | .24883 | .81732 | .66801 | .01817 | .263 |
| Principal Climate 4, Evaluations and Expectations of Students | .40695 | .82897 | .68719 | .01918 | .247 |
| Student Climate 5, Student Academic Norms | .34951 | .83407 | .69568 | .00849 | .442 |
| Student Climate 3, Perceived Present Evaluations and Expectations | .02244 | .84271 | .71016 | .01448 | .317 |

Total $R^2$ for 13 climate variables was .72810. One climate variable, Principal Climate 1, was omitted because the F-level was insufficient for computation.

TABLE 8.

Multiple Regression Analysis of Mean School Climate Variables That Contribute Approximately One Percent or More to the Variance in Mean School Achievement in a Random Sample of 61 Majority White Elementary Schools in Michigan

| Variance | Simple r | Multiple R | $R^2$ | $R^2$ change | Significance |
|---|---|---|---|---|---|
| Student Climate 1, Student Sense of Academic Futility | .51428 | .51428 | .26448 | | .000 |
| Principal Climate 2, Principal's Efforts to Improve | -.25514 | .55476 | .30776 | .04328 | .062 |
| Principal Climate 1, Parent Concern and Expectations for Quality Education | .31526 | .58658 | .34407 | .03632 | .081 |
| Student Climate 5, Student Academic Norms | -.08328 | .60559 | .36674 | .02267 | .162 |
| Teacher Climate 2, Present Evaluations and Expectations for High School Completion | .41944 | .62419 | .38961 | .02287 | .157 |
| Teacher Climate 5, Teacher Academic Futility | .08889 | .63664 | .40532 | .01571 | .238 |
| Principal Climate 4, Evaluations and Expectations of Students | .21646 | .64458 | .41548 | .01016 | .341 |

Total $R^2$ for 14 climate variables .44519.

is related to school achievement in majority black schools as compared to majority white schools. In the black schools, the teachers' commitment to improve and the teachers' perception of the principal's expectations enter the regression analysis immediately following the students' sense of academic futility. Two principal variables, the principal's evaluation of school quality and the principal's present evaluations and expectations of the students, also contribute somewhat to the variance in mean school achievement in the black schools. These suggest that the teachers' commitment to doing a good job and the principal's expectations and evaluations may be more effective in the majority black elementary schools than in the white ones.

The climate variables that account for significant variance in mean school achievement in the majority white sample other than student sense of academic futility vary from those in the black sample. Student academic norms, the teachers' expressed evaluations and expectations, and the principal's efforts to improve contribute relatively more in the white than in the black sample. The set shown in Table 8 explains slightly over 40 percent of the variance in mean school achievement in the white sample while the sets shown in Tables 6 and 7 explain 70 percnt and 71 percent respectively, in the state and black samples. It appears, therefore, that other unidentified variables are contributing more to the variance in mean school achievement in representative white elementary schools than in the majority black ones.

## Sense of Academic Futility as Dependent Variable

Since students' sense of academic futility accounted for so much of the variance in mean school achievement in all the samples, further comments concerning the nature of this variable are appropriate. As will be noted by in-

spection of the items in this variable, it is in part composed of five items which are similar to Coleman's sense of control items. Clustered with these, however, are a set of items in which the students report the reaction of their fellow students to high achievement and another set which indicates the students' perception of the teachers' concern for academic achievement. A school characterized by a high sense of academic futility, therefore, is one in which the students feel they have no control over their success or failure in the school social system, the teachers do not care if they succeed or not, and their fellow students punish them if they do succeed. This variable then is an elaboration of one commonly identified as sense of control.

Regression analyses were carried out using sense of academic futility as the dependent variable with the composition and other climate variables as independent ones to determine which, if any of these, significantly accounted for variance in sense of academic futility. In the state sample, teacher climate variables explain 54 percent of the mean variance in sense of academic futility with SES and percent white accounting for an additional 10 percent after the climate variables. In both the white and black samples, the teacher climate variables account for somewhat less of the variance in mean sense of academic futility, approximately 35 percent, and the contribution of SES and percent white was about the same.

## Tentative Findings from School Observations

It is clear from the above discussion that mean school climate is related to mean school achievement. However, the processes by which students become socialized in the school social system cannot be ansered by our statistical analyses. Several of the sampled schools, therefore, were observed for several

weeks following the survey to supplement those findings. Several comments concerning these schools and the findings from these observations are relevant to the issues in this paper.

Four schools were selected for participant observation based on their SES, racial composition and achievement levels. Schools having similar SES and racial composition, but significantly different levels of achievement were paired. One pair was comprised of low SES, predominantly black schools having significantly different levels of achievement and the other pair was comprised of low SES, white schools having different levels of achievement. Two staff members who had been involved with the research from the outset and were, therefore, well acquainted with the climate variables were the participant observers in these schools.

Although participant observation was the primary source of data, meaningful additional data were obtained through informal interviews with teachers, principals and students. The time spent in each school ranged from two weeks to three months.

The relatively high achieving lower SES schools, one 100 percent white and the other predominantly black and chicano, are distinguished from similar low achieving schools by several characteristics in addition to the school climate differences previously identified. First, the teachers in higher achieving schools spend a larger proportion of class time in instruction. This commitment of time to instruction in higher achieving schools is associated with greater concern for and commitment to their students' achievement. The commitment is also expressed by other forms of interaction with their students.

A second relevant observation is that the low SES schools achieving at lower levels tend to "write off" a larger proportion of their student body.

For example, in one of the schools, nearly half of the students are grouped in a slow group and low ceilings are established for the achievement of these students. In one of the higher achieving schools observed, very few students are so identified and these only for the purpose of giving them extra instruction to maximize their achievement. In another higher achieving low SES school, the teachers indicate that although they probably will not be able to achieve a normal full-year gain in math or reading with some of their students, they continue to teach them with the normal year's growth as a goal.

A third preliminary finding indicates that those schools with higher achievement are likely to use more teaching games in which groups of students are competing as teams rather than individually. This is a very tentative observation and, of course, is based on only a few schools, but it is in accord with other findings with regard to team games (DeVries and Mescon, 1975).

A fourth tentative finding of our participant observations of a few schools is the possible difference in teacher and student reinforcement practices in higher achieving and lower achieving schools. In the two higher achieving lower SES schools in which we observed, there was little evidence of either confused or positive reinforcement of students who gave incorrect answers. General practice is for the teachers to make immediate corrections and provide reinstruction when students fail to give correct responses. Also, positive reinforcement is generally given immediately to students who give correct answers. In lower achieving schools we observed numerous instances where the students were neither positively nor negatively reinforced for their performance. On other occasions, students identified as slow are positively reinforced for incorrect answers. Confusion in reinforcement, in which students get the same kind of reinforcement for wrong answers as they get for right answers is also evident in these lower achieving schools.

The above findings from observations of four schools are identified as tentative because they are based on such a small number of schools. They do, however, demonstrate that schools with similar SES and racial composition do differ in the patterns of interaction associated with school climate. These differences may also contribute to the variance in mean achievement between schools.

## Conclusions and Implications

The first and foremost general conclusion derived from this research is that some aspects of school social environment clearly make a difference in the academic achievement between schools. Although there is much variance in individual achievement within schools, there is also a vast difference between schools in the percentage of students who master the basic academic objectives in the early elementary years. This mean percentage in our samples ranges from 42 percent to 88 percent. The socio-economic and racial composition of the schools explain a significant portion of this variance in mean achievement between schools, but the social-psychological and normative variables which we have identified clearly contribute an additional portion to the explanation of the variance in mean school achievement. Furthermore, much of the variance attributed to social composition may also be explained by the differences in the social-psychological climate associated with socio-economic and racial composition. In fact, only a small proportion of the variance in achievement between schools is explained by these composition variables after the effect of the social-psychological climate variables has been removed.

The correlation noted between social-psychological climate variables and composition and our school observations demonstrates that composition alone is

an inadequate description of elementary school environment. Some low SES white and black schools do have school climates favorable for achievement and some high SES schools have school climates that are not highly favorable for achievement. It is clear that school composition does not necessarily determine school climate and therefore changes in school composition in the absence of changes in climate do not guarantee changes in school level achievement. Predominantly low SES and minority schools are more likely to be characterized by a high sense of student academic futility, low academic norms and low expectations for and evaluations of the students. In fact, these composition characteristics frequently may contribute to the development of differential expectations, norms, and feelings of futility. But these composition variables do not invariably produce such climate differences. Favorable climate rather than specific composition is, we believe, the necessary condition for high achievement.

If we apply these findings to the school desegregation issue, it seems safe to conclude that neither racial nor socio-economic desegregation of schools automatically produces higher school achievement. If the unfavorable social-psychological climate which typically characterizes segregated black and lower SES schools continues to prevail for the poor or minority students in the desegregated schools, desegregation is not likely to materially affect the achievement of the students. If the social-psychological climate relevant to the poor and minority is improved in conjunction with desegregation, higher achievement is likely to result. The inconsistent effect of racial desegregation on school achievement (St. John, 1975) may result from inconsistent patterns of change in the academic climate relevant to minority students in desegregated schools.

We recognize other school variables may contribute to differences in academic achievement between elementary schools. A future report will examine the effect of input variables such as teacher salary, teacher-pupil ratio, and teacher qualifications as well as school social structure variables, e.g., open-closed organization, degree of differential programs and parent involvement, on mean school achievement. Although these variables account for a small proportion of the variance in achievement between schools, none adds much to the variance explained by social composition and/or school climate. We have focused here on the identification of school climate as an aspect of elementary school environment and its contribution to the differences in academic achievement between schools.

# APPENDIX A

Student Climate Variables I-V

Teacher Climate Variables I-V

Principal Climate Variables I-IV

APPENDIX A

## Questions in Student Climate Variables I-V

### I. Student Sense of Academic Futility

How many students in this school don't care if they get bad grades?

How many students in this school make fun of or tease students who get real good grades?

How many students don't do as well as they could do in school because they are afraid other students won't like them as much?

How many students don't do as well as they could do in school because they are afraid their friends won't like them as much?

People like me will not have much of a chance to do what we want to in life.

People like me will never do well in school even though we try hard.

I can do well in school if I work hard.

In this school, students like me don't have any luck.

You have to be lucky to get good grades in this school.

How many teachers in this school tell students to try and get better grades than their classmates?

Of the teachers that you know in this school, how many don't care if the students get bad grades?

Of the teachers that you know in this school, how many don't care how hard the student works, as long as he passes?

### II. Student Future Evaluations and Expectations

If you could go as far as you wanted in school, how far would you like to go?

Sometimes what you <u>want</u> to happen is not what you <u>think</u> will happen. How far do you <u>think</u> you will go in school?

If most of the students here could go as far as they wanted in school, how far would they go?

How far do you think your best friend believes you will go in school?

How far do you think <u>the teacher you like best</u> believes you will go in school?

Does your teacher think you could finish college?

Remember you need more than four years of college to be a teacher or doctor. Does your teacher think you could do that?

How far do you think your parents believe you will go in school?

APPENDIX A

## Questions in Teacher Climate Variables I-V

### I. Ability, Evaluations, Expectations and Quality of Education for College

What percent of the students in this school do you expect to attend college?

What percent of students in your class do you expect to attend college?

What percent of the students in this school do you expect to complete college?

What percent of the students in your class do you expect to complete college?

How many of the students in this school are capable of getting mostly A's and B's?

How many of the students in your class are capable of getting mostly A's and B's?

How would you rate the academic ability of the students in this school compared to other schools?

What percent of the students in this school would you say want to go to college?

What percent of the students in your class would you say want to go to college?

Completion of college is a realistic goal which you set for what percentage of your students?

The parents of students in this school are deeply concerned that their children receive a top quality education.

How many of the parents of students in this school expect their children to complete college?

### II. Present Evaluations and Expectations for High School Completion

On the average, what level of achievement can be expected of the students in this school?

On the average, what level of achievement can be expected of the students in your class?

What percent of the students in this school do you expect to complete high school?

What percent of the students in your class do you expect to complete high school?

What percent of the students in this school would you say want to complete high school?

Do your parents think you could finish college?

Remember you need more than four years of college to be a teacher or doctor. Do your parents think you could do that?

III. Student Perceived Present Evaluations and Expectations

How good a student does the teacher you like the best expect you to be in school?

Think of your teacher. Would your teacher say you can do school work better, the same or poorer than other people your age?

Would your teacher say that your grades would be with the best, same as most or below most of the students when you graduate from high school?

How good of a student do your parents expect you to be in school?

Think of your parents. Do your parents say you can do school work better, the same or poorer than your friends?

Would your parents say that your grades would be with the best, same as most or below most of the students when you finish high school?

IV. Student Perception of Teacher Push and Teacher Norms

Of the teachers that you know in this school, how many tell students to try hard to do better on tests?

How often do teachers in this school try to help students who do badly on their school work?

How important is it to teachers in this school that their students learn their school work?

Think about the teachers you know in this school. Do you think the teachers in this school care more, or less, than teachers in other schools about whether or not their students learn their school work?

V. Student Academic Norms

How many students in this school try hard to get a good grade on their weekly tests?

How many students in this school will work hard to get a better grade on the weekly tests than their friends do?

How important do most of the students in this class feel it is to do well in school work?

How important do you think most of the students in this school feel it is to do well in school work?

Compared to students in other schools, how much do students in this school learn?

Compared to students from other schools, how well will most of the students from this school do in high school?

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What percent of the students in your class would you say want to complete high school?

Completion of high school is a realistic goal which you set for what percentage of your students?

How often do you stress to your students the necessity of a post high school education for a good job and/or a comfortable life?

How many of the parents of students in this school expect their children to complete high school?

III. Teacher-Student Commitment to Improve

Do you encourage your students who do not have sufficient economic resources to aspire to go to college?

Do you encourage your students who do not have sufficient academic ability to aspire to go to college?

How many teachers in this school feel that all their students should be taught to read well and master other academic subjects, even though some students may not appear to be interested?

How many teacher encourage students to seek extra school work so that the students can get better grades?

How many students in this school try hard to improve on previous work?

How many students in your class try hard to improve on previous work?

How many students in this school will try hard to do better school work than their friends?

How many students in your class will try hard to do better school work than their classmates do?

How many students in this school will seek extra work so that they can get better grades?

How many students in your class will seek extra work so that they can get better grades?

IV. Teacher Perception of Principal's Expectations

What percent of the students in this school do you think the principal expects to complete high school?

What percent of the students in this school do you think the principal expects to attend college?

What percent of the students in this school do you think the principal expects to complete college?

How many students in this school do you think the principal believes are capable of getting mostly A's and B's?

How do you think your principal rates the academic ability of the students in this school, compared to other schools?

V. Teacher Academic Futility

It would be unfair for teachers in this school to insist on a higher level of achievement from students than they now seem capable of achieving.

If I think a student is not able to do some school work, I don't try to push him very hard.

I am generally very careful not to push students to a level of frustration.

How many students in this school are content to do less than they should?

How many students in your class are content to do less than they should?

The parents of students in this school regard this school primarily as a "baby-sitting" agency.

How many of the parents of students in this school don't care if their children obtain low grades?

In this school, there is really very little a teacher can do to insure that all of his/her students achieve at a high level.

APPENDIX A

## Questions in Principal Climate Variables I-IV

I. Parent Concern and Expectations for Quality Education

The parents of students in this school regard this school as primarily a "babysitting" agency.

The parents of students in this school are deeply concerned that their children receive a top quality education.

How many of the parents of students in this school expect their children to complete high school?

How many of the parents of students in this school don't care if their children obtain low grades?

How many of the parents of students in this school want feedback from the principal and teachers on how their children are doing in school?

II. Principal's Efforts to Improve

How often do you suggest ways of improving student achievement to your teachers?

How often do you meet with the teachers as a group to discuss ways of improving student achievement?

III. Principal and Parent Evaluation of Present School Quality

In your judgment, what is the general reputation of this school among educators?

With regard to student achievement, how would you rate this school?

In general, how do your student's parents feel about the achievement of their children?

In general, how do you feel about the achievement of the students in this school?

IV. Principal's Present Expectations and Evaluations of Students

With regard to student achievement, how good a school do you think this school <u>can</u> be?

On the average, what achievement level can be expected of the students in this school?

What percent of the students in this school do you expect to complete high school?

What percent of the students in this school do you expect to <u>attend</u> college?

What percent of the students in this school do you expect to <u>complete</u> college?

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How many of the students in this school are capable of getting good grades?

How would you rate the academic ability of the students in this school compared to other schools?

How many of the parents of students in this school expect their children to complete college?

What percentage of the students in this school do you feel are capable of learning to read by the end of second grade?

## APPENDIX B

### Correlation Matrices

Variables included in the following matrices:

ACH74 - Mean School Achievement 1974

SES - Mean Student Socio-Economic Status

PCTW - Percent White in Student Body

SSCL1 - Student Sense of Academic Futility

SSCL2 - Student Future Evaluations and Expectations

SSCL3 - Student Perceived Present Evaluations and Expectations

SSCL4 - Student Perception of Teacher Push and Teacher Norms

SSCL5 - Student Academic Norms

TSCL1 - Ability, Evaluations, Expectations and Quality of Education for College

TSCL2 - Teacher Present Evaluations and Expectations for High School Completion

TSCL3 - Teacher-Student Commitment to Improve

TSCL4 - Teacher Perception of Principal's Expectations

TSCL5 - Teacher Academic Futility

PSCL1 - Parent Concern and Expectations for Quality Education

PSCL2 - Principal's Efforts to Improve

PSCL3 - Principal and Parent Evaluation of Present School Quality

PSCL4 - Principal's Present Expectations and Evaluations of Students

Correlation Matrix of Percent White, Mean SES, Mean Achievement and Mean Climate Scores in a Random Sample of 68 Schools

| | ACH74 | SES | PCTW | SSCL1 | SSCL2 | SSCL3 | SSCL4 | SSCL5 | TSCL1 | TSCL2 | TSCL3 | TSCL4 | TSCL5 | PSCL1 | PSCL2 | PSCL3 | PSCL4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACH74 | 1.00 | | | | | | | | | | | | | | | | |
| SES | .67 | 1.00 | | | | | | | | | | | | | | | |
| PCTW | .86 | .58 | 1.00 | | | | | | | | | | | | | | |
| SSCL1 | .77 | .79 | .76 | 1.00 | | | | | | | | | | | | | |
| SSCL2 | .22 | .59 | .05 | .44 | 1.00 | | | | | | | | | | | | |
| SSCL3 | -.57 | -.31 | -.65 | -.48 | .20 | 1.00 | | | | | | | | | | | |
| SSCL4 | -.09 | .08 | -.10 | .06 | .31 | .40 | 1.00 | | | | | | | | | | |
| SSCL5 | -.08 | .06 | -.06 | .11 | .20 | .36 | .60 | 1.00 | | | | | | | | | |
| TSCL1 | .23 | .50 | .12 | .34 | .62 | .13 | .19 | .20 | 1.00 | | | | | | | | |
| TSCL2 | .66 | .67 | .65 | .70 | .46 | -.28 | .20 | .11 | .55 | 1.00 | | | | | | | |
| TSCL3 | -.10 | -.14 | -.25 | -.19 | .11 | .31 | -.03 | -.02 | .34 | -.02 | 1.00 | | | | | | |
| TSCL4 | .20 | .30 | .09 | .20 | .34 | -.06 | -.01 | .02 | .57 | .42 | .30 | 1.00 | | | | | |
| TSCL5 | .13 | -.05 | .17 | .02 | -.20 | -.22 | -.22 | -.03 | -.15 | -.05 | -.12 | .32 | 1.00 | | | | |
| PSCL1 | .32 | .39 | .27 | .25 | .24 | -.20 | .07 | .02 | .39 | .34 | .18 | .37 | .01 | 1.00 | | | |
| PSCL2 | -.24 | -.08 | -.16 | -.17 | .16 | .25 | .25 | .09 | -.00 | -.12 | .05 | -.08 | -.16 | -.06 | 1.00 | | |
| PSCL3 | .36 | .40 | .34 | .40 | .16 | -.16 | .09 | .36 | .21 | .42 | -.10 | .18 | .00 | .39 | -.03 | 1.00 | |
| PSCL4 | .38 | .61 | .37 | .52 | .41 | -.17 | .19 | .21 | .42 | .51 | -.03 | .31 | -.05 | .55 | -.02 | .45 | 1.00 |

Correlation Matrix of Percent White, Mean SES, Mean Achievement and Mean Climate Scores in Random Sample of 30 Black Schools

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACH74 | 1.00 | | | | | | | | | | | | | | | | |
| SES | .60 | 1.00 | | | | | | | | | | | | | | | |
| PCTW | .40 | .29 | 1.00 | | | | | | | | | | | | | | |
| SSCL1 | .69 | .80 | .38 | 1.00 | | | | | | | | | | | | | |
| SSCL2 | .40 | .55 | .04 | .52 | 1.00 | | | | | | | | | | | | |
| SSCL3 | .02 | .18 | -.32 | .18 | .59 | 1.00 | | | | | | | | | | | |
| SSCL4 | .20 | .22 | .16 | .05 | .27 | .17 | 1.00 | | | | | | | | | | |
| SSCL5 | .35 | .09 | .15 | .20 | .26 | .31 | .71 | 1.00 | | | | | | | | | |
| TSCL1 | .52 | .45 | .10 | .55 | .44 | .22 | .37 | .22 | 1.00 | | | | | | | | |
| TSCL2 | .27 | .36 | -.01 | .37 | .37 | .36 | .25 | .13 | .72 | 1.00 | | | | | | | |
| TSCL3 | .39 | -.11 | .08 | .05 | .11 | -.01 | .37 | .43 | .50 | .13 | 1.00 | | | | | | |
| TSCL4 | .55 | .36 | .19 | .37 | .31 | .06 | .47 | .36 | .74 | .43 | .49 | 1.00 | | | | | |
| TSCL5 | .06 | .10 | .13 | .01 | -.18 | -.24 | -.05 | -.12 | -.10 | -.38 | .14 | .17 | 1.00 | | | | |
| PSCL1 | .19 | .08 | .20 | .21 | .29 | -.13 | .14 | .08 | .40 | .37 | .27 | .35 | -.05 | 1.00 | | | |
| PSCL2 | -.23 | -.39 | .13 | -.27 | -.06 | -.17 | -.16 | -.29 | .03 | .02 | .07 | -.14 | -.06 | .43 | 1.00 | | |
| PSCL3 | .25 | .48 | .24 | .51 | .13 | -.01 | .26 | .30 | .28 | .18 | -.21 | .41 | .02 | .31 | -.19 | 1.00 | |
| PSCL4 | .41 | .50 | .20 | .45 | .37 | -.01 | .22 | .11 | .50 | .52 | .10 | .36 | -.04 | .46 | .08 | .47 | 1.00 |
| | ACH74 | SES | PCTW | SSCL1 | SSCL2 | SSCL3 | SSCL4 | SSCL5 | TSCL1 | TSCL2 | TSCL3 | TSCL4 | TSCL5 | PSCL1 | PSCL2 | PSCL3 | PSCL4 |

Correlation Matrix of Percent White, Mean SES, Mean Achievement and Mean Climate Scores in Random Sample of 61 White Schools

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACH74 | 1.00 | | | | | | | | | | | | | | | | |
| SES | .55 | 1.00 | | | | | | | | | | | | | | | |
| PCTW | .56 | .44 | 1.00 | | | | | | | | | | | | | | |
| SSCL1 | .51 | .74 | .49 | 1.00 | | | | | | | | | | | | | |
| SSCL2 | .38 | .69 | .15 | .64 | 1.00 | | | | | | | | | | | | |
| SSCL3 | -.17 | -.02 | -.26 | -.15 | .23 | 1.00 | | | | | | | | | | | |
| SSCL4 | .01 | .17 | .06 | .22 | .28 | .43 | 1.00 | | | | | | | | | | |
| SSCL5 | -.08 | .11 | -.02 | .17 | .21 | .40 | .61 | 1.00 | | | | | | | | | |
| TSCL1 | .28 | .53 | .13 | .39 | .62 | .22 | .15 | .21 | 1.00 | | | | | | | | |
| TSCL2 | .42 | .57 | .40 | .50 | .59 | .11 | .30 | .13 | .61 | 1.00 | | | | | | | |
| TSCL3 | .09 | -.06 | -.21 | -.10 | .07 | .22 | -.12 | -.05 | .35 | .09 | 1.00 | | | | | | |
| TSCL4 | .31 | .34 | .19 | .27 | .34 | -.07 | -.04 | .02 | .55 | .50 | .30 | 1.00 | | | | | |
| TSCL5 | .09 | -.12 | .20 | -.07 | -.19 | -.17 | -.15 | .06 | -.15 | -.09 | -.11 | .34 | 1.00 | | | | |
| PSCL1 | .31 | .38 | .29 | .22 | .26 | -.09 | .06 | .08 | .39 | .31 | .21 | .36 | -.07 | 1.00 | | | |
| PSCL2 | -.25 | -.04 | -.23 | -.09 | .12 | .26 | .23 | .16 | -.01 | -.03 | .02 | -.09 | -.19 | -.09 | 1.00 | | |
| PSCL3 | .23 | .32 | .22 | .29 | .20 | .02 | .13 | .38 | .19 | .32 | -.05 | .17 | -.01 | .39 | .04 | 1.00 | |
| PSCL4 | .22 | .56 | .22 | .44 | .44 | .02 | .22 | .24 | .41 | .41 | -.00 | .31 | -.09 | .53 | .02 | .40 | 1.00 |
| | ACH74 | SES | PCTW | SSCL1 | SSCL2 | SSCL3 | SSCL4 | SSCL5 | TSCL1 | TSCL2 | TSCL3 | TSCL4 | TSCL5 | PSCL1 | PSCL2 | PSCL3 | PSCL4 |

## REFERENCES


Anderson, Gary. "Effects of Classroom Social Climate on Individual Learning," American Educational Research Journal. 7:2, March, 1970.

Brookover, Wilbur B. et al. "Self-Concept of Ability and School Achievement, I." East Lansing, Office of Publication Services, College of Education, Michigan State University, 1962.

Brookover, Wilbur B. et al. "Self-Concept of Ability and School Achievement, II." East Lansing, Office of Publication Services, College of Education, Michigan State University, 1965.

Brookover, Wilbur B. et al. "Self-Concept of Ability and School Achievement, III." East Lansing, Office of Publication Services, College of Education, Michigan State University, 1967.

Brookover, Wilbur B. and Edsel Erickson. Society, Schools and Learning. East Lansing, Michigan State University Press, 1969.

Brookover, Wilbur B., Richard Gigliotti, Ronald Henderson and Jeffrey Schneider. "Elementary School Environment and Achievement." East Lansing, College of Urban Development, Michigan State University, 1973.

Brookover, Wilbur B. and Edsel Erickson. Sociology of Education. Homewood, Illinois, Dorsey Press, 1975.

Brookover, Wilbur B. and Jeffrey Schneider. "Academic Environments and Elementary School Achievement," Journal of Research and Development in Education. Vol. 9, No. 1, Fall, 1975.

Coleman, James S. et al. Equality of Educational Opportunity. Washington, D.C., U.S. Government Printing Office, 1966.

DeVries, David and Ida Mescon. Team-Games-Tournament: An Effective Task and Reward Structure in Elementary Grades. Baltimore, Johns Hopkins University, Center for Social Organization of Schools, Report 189, 1975.

Farkas, George. "Specification, Residuals and Context Effects," Sociological Methods and Research. Vol. 2, No. 3, 1974, and reply by Hauser, Robert, "Contextual Analysis Revisited," same reference, 1974.

Hauser, Robert M. Socio-economic Background and Educational Performance. Washington, D.C., American Sociological Association, 1971.

Hauser, Robert M., William Sewell and Duane Alwin. "High School Effects on Achievement." In William Sewell, Robert Hauser and David Featherman, School and Academic Achievement in American Society, New York, Academic Press, 1976.

Jencks, Christopher et al. Inequality. New York, Basic Books, Inc., 1972.

Mayeske, George W. et al. A Study of Our Nation's Schools. (A working paper), Washington, D.C., Office of Education, H.E.W., 1969.

Michigan Department of Education, Questions and Answers About Michigan Educational Assessment, Lansing, Michigan, Michigan Department of Education. (No date given, but published 1975-76)

McDill, Edward L., Edmund D. Meyers and Leo C. Rigsby. "Institutional Effects on Academic Behavior of High School Students." Sociology of Education, 40: 181-99, 1967.

McDill, Edward L. and Leo Rigsby. The Academic Impact of Educational Climates--Structure and Process in Secondary Schools. Baltimore, Johns Hopkins University Press, 1973.

McPartland, James and Joyce Epstein. The Effects of Open School Organization and Student Outcomes. Baltimore, Johns Hopkins University, Center for Social Organization of Schools, Report No. 194, 1974.

Mosteller, Frederick and Daniel Moynihan, eds. On Equality of Educational Opportunity. New York, Vintage Books, 1972.

O'Reilly, R. "Classroom Climate and Achievement in Secondary School Mathematics Classes," Alberta Journal of Educational Research, Vol. XXI: 3, 1975.

St. John, Nancy H. School Desegregation-Outcomes for Children. New York, John Wiley and Sons, 1975.

Smith, Marshall. "Equality of Educational Opportunity: The Basic Findings Reconsidered." in Mosteller and Moynihan, 1972.